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NOVEMBER 1992

PIKES PEAK RADIO AMATEUR ASSOCIATION, INC.
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Ø BEAT

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PRESIDENT	LUCI STANSBERRY NØUD	2630 E. UINTAH 80909	636-1290
VICE-PRESIDENT	MALLORY JEFFERIS NØIKF	854 CHAPMAN DRIVE 80916	591-0049
SECRETARY	LIZ DEUTSCH NØTUK	4305 RIDGELANE DRIVE 80918	593-8352
TREASURER	THOMAS L. MCDANIEL NØNTX	4255 SHINING WAY 80916	570-1465
PAST PRESIDENT	HARV SIMS WB6YXD	19740 FOUR WINDS WAY 80132	481-4597
BOARD MEMBER	KEN PHILLIPS NØNKP	4850 SANTIAGO WAY 80917	574-6358
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Ø-BEAT EDITOR	RON DEUTSCH NKØP	4305 RIDGELANE DRIVE 80918	593-8352

ZERO BEAT is published monthly in the interest of the members of the Pikes Peak Radio Amateur Association, Inc., P.O. Box 16521, Colorado Springs, Colorado 80935. For membership and subscription information see last page of this publication. The Pikes Peak Radio Amateur Association meets on the second Wednesday of each month at the Elk's Lodge, 3400 North Nevada Ave. at 7 p.m.

EDITOR: Ron Deutsch NKØP 4305 Ridgelane Drive, Colorado Springs, Colorado 80918 (719) 593-8352.

Deadline for submission of articles or ads is the 21st of each month. Submissions may be sent to the editor or to the club mail box. Permission to reprint articles is granted provided credit is given to both the author and this publication.

ADVERTISING RATES: Full page \$48; half page \$24, quarter page \$12, business card size \$6. These are monthly rates and are billed quarterly. Send your ad requests and payments to: P.O. Box 16521, Colorado Springs, CO 80935.

From the President...

This is going to be a very interesting year. Writing the President's column is going to be a challenge. I would like it to be a question and answer column. I encourage questions that you would like answered.

I would like to thank the retiring board members for doing a very super job. Thanks to Russ Calaway, KBØFNM; Al Vrooman, NØCMW and Matt Warnock, KC4KGS. The past President, Harv Sims, WB6YXD will still be a board member, but I would like to thank him for a great job. I hope I can fill his shoes.

The October meeting was high in attendance. I would like to see more meetings like the this one. I would like to apologize for the lack of a PA system that left a lot of people unable to hear well. There is a discussion about rectifying this problem.

Well, I hope the ghosts and goblins didn't play with your radio's. Until next month....

President Luci, NØUD

PPRAA Christmas Party

The PPRAA Christmas party will be held December 9th (our regular club meeting nite) at the Elk's Club. Starting at 7PM. This will be a pot luck for snacks and deserts only.

Prizes and entertainment will be provided. For more information or to volunteer to help contact Susan, KA7NNX at 495-0624.

ELIC Display

The PPRAA hosted a display at the East Library and Information Center on October 31, 1992 from 10am to 4pm. The event was organized by Publicity Chairman, Al Craig, N2IWZ.

Many club members turned out to help educate the library patrons on the many different aspects of radio communications. Tables on ATV, ARES, RACES, Satellite communications and message handling to name a few were available for public scrutiny.

The Edge of Space Science group were on hand with live video of a balloon launch in Longmont.

The Library provided cookies and juice and in spite of the cold snowy turn of the weather after lunch the turn out was good and everyone seemed to have a good time. Al, N2IWZ, plans a more in depth article for next months newsletter.

U.S. Hams

Extra	59,720
Advanced ..	109,020
General	124,202
Tech	179,761
Novice	98,577
Total	571,280

Data from the ARRL Letter, Aug. 10, 1992.

Operating Events

Rick Brown - KD0SU

NOVEMBER

7 - 9 ARRL November Sweepstakes, CW. This is a great contest for everyone. There is even a section for slow speed CW operation. Work 100 stations and you can receive a hat pin from the ARRL. See October QST, page 121.

14 - 15 ARRL International EME Competition. Are there any moon bounce artists out there. Here is your contest. See September QST, page 124.

21 - 23 ARRL November Sweepstakes, Phone. This one is as much fun as the CW contest. Even the little guys can work a bunch. October QST, page 121.

28 - 29 CQ World Wide DX Contest, CW. This is one of the biggies. Details in October CQ, or Oct 24 listing in October QST.

VHF AWARDS

Rick Brown - KD0SU

Some of you may remember that I was appointed an HF Awards Manager a few months ago. Well, the wheels of bureaucracy turn slowly even withing Ham Radio. I have also received authorization from the ARRL to be VHF Awards Manager.

As a VHF Awards Manager I can verify applications for any of the VHF awards given out by the ARRL. The most popular of these awards is VUCC for working 100 or more grids on Six or Two meters. Awards are also available for working 100 grids via Satellite! If you are interested in these awards I have copies of the rules or you may get them from the ARRL.

Many thanks to the PPRAA for nominating me to this position. I look forward to helping any of you in receiving a VHF operating award.

November Program

The program for the November PPRAA meeting will feature Steve Cloughesy and his search and rescue dog, Sambuca.

VE Testing

Al, AD0Z, and Frank, KF0WF had a bumper crop of enthusiasts at their recent Novice classes. On October 15th VE Testing took place with a great turnout. Fifty examinees were given 73 different tests that evening. The results follow:

Novice - 3
Technician - 10
Tech/HF - 1
Advanced - 1
Extra - 1

In addition to those people passing exams for new licenses or for upgrade many of the people present recieved element credit for one or more elements. I am sure they will be back soon to take more exams.

Many thanks to all of the Volunteer Examiners who helped out, and especially to Bill, K4YCD who handled all the paperwork when it was over.

Dits and Bits

For Sale:

Numerous items of amateur radio equipment, test equipment, parts and publications, some of historical significance, from the estate of Glenn Flynn, W0MHV. Contact Jim Flynn, K0MRS, 633-5837 for an inventory list and other information.

For Sale:

Drake TR-33C Two meter crystal controlled transceiver. Battery powered and runs two watts out. \$25. Rick, KD0SU, 531-9423

Wanted:

Manual for Heathkit DX - 20 transmitter. Will pay for copying you don't want to give up this treasure. Rick, KD0SU, 531-9423

Committee Chairpersons

Publicity	Al Craig	594-9288
Membership	Les Borst	634-3995
Education	Al Bailey	597-8514
VE Testing	Chris Smith	495-0624
Interference	Bill Petty	591-2116
RACES	Doug Moloney	(unlisted)
ARES	John Chapman	635-1604
SKYWARN	Steve Westby	570-1070
Public Service	Mike Stansberry	636-1290
CCARC	Oak Stockton	570-7782
Club Trailer	Steve Westby	570-1070
Newsletter	Ron Deutsch	593-8352
Club Historian	Al Craig	594-9288

October PPRAA Board Meeting

The meeting was called to order at 7pm on October 20 at the QTH of Al, N2IWZ. The following members and guests were present:

Steve, WB7VHR; Thomas, N0NTX; Rosie, WA0MNL; Mallory, N0IKF; Harve, WB6YXD; Al, N2IWZ; Matt KC4KGS; Ron, NKOP; Ken, N0NKP; Lucy N00UD; Russ, KB0FNM; Liz N0TUK.

The Board passed a proposal to change the Board meeting to the Sunday after the PPRAA Club meeting.

The next meeting will be on November 15th at 3pm at the QTH of Ken, N0NKP.

Club books will be audited yearly. Matt, KC4KGS will meet with Thomas, N0NTX sometime in November to do the audit.

ARES is requesting funds for equipment it would like to purchase. The Board voted to propose to ARES that ARES hold a raffle to defray the cost of the equipment. The Club would provide the raffle prize.

Club representatives will meet with the new Manager of the Elks Club. It was suggested the Club purchase a new public address system for use during the Club meetings and for use by the Elks. Several other proposals to provide a public address system for Club meetings were suggested.

Harv, WB6YXD will give a presentation to the Colorado Springs Police Chief re. the use of Ham Radio operators to assist Police.

QSL cards with the Club logo were discussed.

By-laws and the membership roster will be published in Ø-Beat.

Al, N2IWZ discussed the program at the East Library scheduled for October 31.

The Board suggested the appointment of a Program Director for Club meetings. The November program will be on emergency services.

"Home brew" night is scheduled for the January meeting.

A severe weather class was suggested as a future program.

A monthly program for Public TV and a monthly column in the newspaper were offered as suggestions to publicize Ham radio.

The Board approved two Furr's gift certificates for each Rustic Hills employee who helped in the recent Ham Radio classes at Rustic Hills.

The meeting adjourned at 9pm.

Submitted by Liz, N0TUK, PPRAA Secretary

Home Brew Nite is coming...

The PPRAA will again have a Home Brew Project program at the January meeting. Prizes will be awarded for the best projects as voted by the members present on meeting nite.

General Meeting

October 14, 1992

The meeting was called to order by Lucy, N0IUD. Members and guests introduced themselves. Last month's minutes were approved as printed in Ø-Beat.

Treasurer-

Previous Balance- \$1042.41

Income \$ 281.33

Bills \$ 293.45

New Balance \$1030.29

Publicity - Al, N2IWZ discussed plans for the East Library Amateur Radio demonstration planned for October 31.

Education - Al AD0Z announced that Novice classes were completed on October 12. Technician classes will start on October 19. They will be twice weekly for a total of six classes. The Technician test date is November 9.

VE Testing - Chris NX0E. Rick KD0SU reported that VE's are needed to help with a test session on November 27 at Fairchild Hall at the USAFA.

Interference - Bill N0NIX reported two occurrences related to a light switch.

ARES - John N0KIC announced that there is an ARES Net at 7PM on Tuesday nights on 36/97.

RACES - Doug W0MHP announced RACES Nets on Tuesday nights at 7:30pm on 37/97 and Sunday mornings at 7:30am on 3990.5.

Skywarn - Steve WB7VHR Nothing to report.

Public Service - Mike K0TER requested volunteers to assist with message passing at a local retirement home on November 22. The Club has so far been asked to assist in eight events in 1993. Volunteers will be needed.

CCARC - Oak K0ROL announced that the next meeting will be held in Denver.

Ø-Beat - Ron NKOP thanked Susan KA7NNX and Chris NX0E for publishing Ø-Beat for the last two months.

Christmas Party - Susan KA7NNX announced that the party will be held on December 9. See Ø-Beat for details.

Old Business - None

New Business - The Club approved a change in the By-Laws which would add one person to the Board of Directors. The immediate past President of the club will hold a one year term on the Board of Directors starting with the termination of his/her term as Club President. This will help provide continuity.

"Hammy" was awarded to Matt KC4KGS for his honesty in returning his General Class License which was accidentally issued to him by the FCC. Matt subsequently passed the General Class License exam and was awarded the General Class License.

Election results were as follows:

President, Lucy N0IUD (accl);

Vice President, Mallory N0IKF (accl);

Treasurer, Tom N0NTX (accl);

Secretary, Liz N0TUK (accl);

Two year Board term, Ken N0NKP;

continued on page 11

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BY-LAWS OF PIKES PEAK RADIO AMATEUR ASSOCIATION, INC.

ARTICLE I

OFFICE:

Section 1. Principal office

The principal office of the association shall be in the City of Colorado Springs, County of El Paso, State of Colorado.

Section 2. Other offices

The association may also have offices in such places as the Board of Directors may from time to time appoint or as the business of the association may require.

ARTICLE II

MEMBERSHIP AND MEMBER MEETINGS:

Section 1. Membership

The following persons shall be eligible for membership in the association, in the class of membership indicated.

a. Full members

Any person who is the holder of a valid, renewable amateur radio operator license issued by the appropriate governmental entity shall be eligible to be a full member of the association. Full members shall be entitled to vote on all matters at all meetings of the association and shall be entitled to hold any office in the association.

b. Associate members

Any person interested in amateur radio shall be eligible to be an associate member of the association. Such members shall not be entitled to vote in any meeting of the association nor hold office therein.

c. Family membership

Any person who is the husband or wife, brother or sister, son or daughter, father or mother of a member and living at the same address of such member who is paying the regular dues for membership may, at such person's request, also become a member upon payment in advance of the dues specified for such person in Article IX, hereof, but without the right to receive the association's publication Zero Beat.

Section 2. Meetings

Regular monthly meetings of the association shall be held on the second Wednesday of each month at a time and location specified by the board. One association picnic meeting each year shall be held during one of the summer months at a time and location specified by the board. Said picnic may be in addition to or in lieu of a regular association meeting as directed by the board. Additional meetings may be held for such special occasions as the association may desire providing at least 96 hours notice is given to all members of record.

Section 3. Annual meeting

The annual meeting of the members shall be held on the second Wednesday of October of each year at a time and location specified by the board. At said meeting the members entitled to vote, shall elect by ballot by a plurality vote of such members present, four directors for a term of two (2) years to serve with the four holdover directors, for the ensuing year, or until their successors shall be duly elected and qualify, and shall transact such other business as may properly come before the meeting.

Section 4. Notice of meetings

Notice of meeting of the members shall be given in and concurrent with the mailing of the association publication Zero Beat.

Section 5. Quorum

Thirty percent of the voting members of the association shall constitute a quorum at each meeting, provided however, that if less than thirty percent of the voting members shall be present in person at each meeting those members present shall have the power to adjourn such meeting from time to time until a quorum shall be present. No notice of an adjourned meeting shall be required.

Section 6. Resignation

Any members of the association may resign at any time by delivering to the secretary a notice in writing to that effect. In the event of resignation no refund of dues shall be made.

Section 7. Cancellation of membership

a) If any member shall fail to pay his or her annual dues by the end of the month in which such annual dues shall fall due his or her membership shall be deemed canceled.

b) Unacceptable behavior.

Any member whose conduct is not true to the spirit of amateur radio in that he violates the rules established by the Federal Communications Commission in a knowing and willful manner "whether the FCC is involved in the matter or not" and who makes no obvious effort to change his behavior may have his membership canceled by a majority vote of the board of directors. The individual will be informed of the action that the board of directors is going to take, and if he desires he can request that his expulsion be voted on by those present at the next regular monthly meeting of the membership. A simple majority of those present at that meeting will decide the matter. In the event that he is expelled, the remaining portion of his membership dues shall be returned to him except where his membership was given at no charge.

ARTICLE III

BOARD OF DIRECTORS:

Section 1. General powers

The control and management of the affairs and funds of the association shall be under a Board of Directors, consisting of eight elected members and the editor of Zero Beat. In addition to the powers conferred by these by-laws, the Board may exercise such other powers as are not by statute, by the Articles of Incorporation or by these by-laws required to be exercised by the members.

Section 2. Election and term of office of directors

Elected directors shall serve for a period of two years, except as provided in the Articles of Incorporation. Four directors shall be elected in alternate years to serve for a two year period. The editor of Zero Beat shall serve for as long as that person remains the editor of Zero Beat. In addition to the above members, the past president shall be a board member for one year following the expiration of his/her term.

Section 3. Removal from Office

Any director of the association who misses two board meetings in succession without notifying the President or vice-president at least 24 hours prior to the meeting will be considered to have resigned his/her position. However, a director who cannot attend a board meeting and has notified the President or vice-president to that effect and has, in addition, appointed a member in good standing to act for him/her in which case the director will not be considered to have resigned even if he/she misses a number of concurrent meetings.

Section 4. Resignation

Any director of the association may resign at any time by giving written notice to the Board of Directors or the Secretary of the Association. The editor of Zero Beat shall be deemed to have resigned from the board when said person resigns from being the editor of Zero Beat.

Section 5. Vacancies

Any vacancy on the Board of Directors for any reason other than by the resignation of the editor of Zero Beat shall be filled by ballot by plurality vote of the voting members present at the next monthly meeting of the members following the occurrence of such vacancy, and the director so elected shall serve the unexpired term of the director whose vacancy is being filled. A vacancy caused by the resignation of the editor of Zero Beat shall be automatically filled by the new editor of Zero Beat.

Section 6. Notice of directors' meeting

Notice of meetings of the directors shall be made by mail, telephone or radio at least eight hours prior to such meeting.

Section 7. Quorum

A simple majority of the directors shall constitute a quorum at any directors' meeting. In the absence of a quorum, the directors present may adjourn such meeting until a quorum shall be present. No notice of any adjourned meeting need be given.

Section 8. Limitations on board authorized expenditures.

The board of directors shall not be empowered to authorize any single expenditure which exceeds \$500.00. Such an expenditure will require approval of two thirds of the membership in good standing present at the next regular monthly meeting or at a special meeting held in accordance with the requirements of the by-laws.

ARTICLE IV

OFFICERS:

Section 1. Number

The principal officers of the association shall be a President, a vice-president, a Secretary and a Treasurer. All such officers shall be members of the Board of Directors.

Section 2. Duties

The duties of the officers shall be as follows:

- a. The President shall preside at all meetings of the association, and shall conduct them according to the rules adopted. He/she shall enforce due observance of the Constitution and by-laws, decide all questions of order, sign all official documents adopted by the association, and conduct all other duties pertaining to the office of President.

- b. The Vice-President shall assume the duties of the President in his/her absence.
- c. The Secretary shall keep a record of the proceedings of all meetings, carry on all correspondence, read communications at all meetings and such other duties pertaining to the office. At the expiration of his/her term he/she shall turn over items belonging to the association to his/her successor.
- d. The Treasurer shall receive and account for all moneys paid to the association, pay all authorized bills, and render such accountings to the board and membership as required by the board. At each meeting he/she shall submit an accounting of all income and expenses for the approval of the membership. At the end of his/her term, he/she shall turn over all items belonging to the association to his/her successor.

Section 3. Removal from office

Any officer may be removed from office by a three-fourths vote of the membership.

Section 4. Election

The officers of the association shall be elected at the regular annual meeting of the members by ballot by plurality vote of the voting members present at the meeting.

Section 5. Resignations

Any officer may resign at any time by giving written note to the Board of Directors or the Secretary of the association.

Section 6. Vacancies

A vacancy in the office of the President for any reason shall be automatically filled by the Vice-President. A vacancy in any other office for any reason shall be filled for the unexpired portion of the term by ballot by plurality vote of the voting members at the next regular monthly meeting following the occurrence of such vacancy.

ARTICLE V

INDEMNIFICATION

The association shall indemnify, by means of Bond and/or other suitable insurance coverage each director and officer now or hereafter a director or officer, his or her heirs, executors and administrators, against all cost, expenses and liabilities including settlements approved by the Board of Directors reasonably insured or imposed upon him or her in connection with or resulting from any action, suit or proceedings or the settlement or compromise thereof prior to final adjudication to which he or she is or may be made a party by reason of his or her being or having been a director or an officer, except in relation to matters as to which he or she is finally adjudged in such action, suit or proceedings to have been derelict in the performance of his or her duty as such director or officer. The provisions for insuring the above indemnity shall be reviewed at each annual meeting of the association.

ARTICLE VI

SEAL:

The association shall have a seal which shall be in the form of the association emblem and shall bear the name of the association.

ARTICLE VII

COMMITTEES

Section 1. General

The committees designated in the Sections below shall be standing committees, the chairman and membership of which shall be designated by the Board of Directors at its first meeting following the annual meeting of the membership of the association.

Section 2. Nominating committee

The nominating committee shall consist of the officers and board of directors. The committee shall nominate a list of eligible members as needed for officers and directors at the board meeting occurring the month prior to the annual association meeting. In addition to nominations made by this committee, the President shall receive nominations of eligible members from the floor at the annual meeting. Such nominations shall be made by and seconded by voting members in good standing.

Section 3. Program and Entertainment committee

The program and entertainment committee shall be responsible for the programs at monthly meetings as well as association party planning.

Section 4. Interference committee

The interference committee shall be responsible for investigating and making recommendations in cases of reported interference and shall work in conjunction with the Federal Communications Commission.

Section 5. Activity committee

The activity committee shall be responsible for all activities of the association outside the regular monthly meetings not otherwise delegated.

Section 6. Publicity committee

The publicity committee shall be responsible for the dissemination of information to the mass media concerning the activities of the association and amateur radio in general.

Section 7. Membership committee

The membership committee shall be responsible for keeping the membership list current, including both new membership applications and renewals. This committee shall print out the labels for Zero Beat monthly as well as a complete membership roster for publication in Zero Beat every four months. The chairperson or a committee member must have access to a computer and printer.

Section 8. Auditing committee

The auditing committee shall be responsible for the financial report of the treasurer and for the proper audit of the same.

Section 9. Technical instruction committee

The technical instruction committee shall be responsible for scheduling and conducting classes of technical instruction for interested persons.

Section 10. Zero Beat committee

The Zero Beat committee shall be responsible for the production and mailing of the monthly association publication Zero Beat.

Section 11. Special committees

The Board of Directors shall be empowered to appoint special committees from time to time to carry out the duties set forth in appropriate instructions promulgated by the board.

ARTICLE VIII

RULES OF ORDER:

All meetings shall be conducted in accordance with Robert's Rules of Order.

ARTICLE IX

MEMBERSHIP DUES:

The board of Directors shall set the amount of dues subject to the approval of the membership.

ARTICLE X

AMENDMENTS:

Section 1. Procedures

These By-Laws may be amended, altered or repealed in whole or in part, and new By-Laws may be instituted by the affirmative vote of a majority of the voting members present at the annual or any regularly constituted meeting of the association; provided that the text of the proposed changes be available to the membership in sufficient copies and in sufficient time at or prior to such meeting. All such changes may be proposed in a petition signed by ten full members of the association or by a majority of the Board of Directors.

Section 2. Annual review of By-Laws

The Constitution and By-Laws shall be reviewed annually at the board meeting held the month prior to the annual association meeting. The board shall either approve these documents as presently constituted or take action as outlined in Article X, Section 1 above.

ARTICLE XI

AUTHORITY TO ENCUMBER OR CONVEY PROPERTY:

Encumbrance or conveyance of all or any part of the corporate property either real, personal, or mixed must be approved by a two-third majority vote of the board of directors or by a two-third vote of the membership in attendance at a regularly or annual scheduled meeting. Such encumbrance or conveyance shall be documented in the records of proceedings of such meeting as well as affected financial records.

ARTICLE XII

DISSOLUTION

The pikes Peak Radio Amateur Association may cease to exist as an organization for a number of reasons, three of which are:

- a. The organization decreases in size to the point where it's continued existence is without merit.
- b. An external event such as a war may cause the suspension of amateur radio which could activate reason (a).
- c. The PPRAA may be absorbed into another organization.

For the PPRAA to be officially dissolved, for any reason, an affirmative vote by two thirds of the members of record in good standing who can be located shall be required. In cases (a) and (b) all assets of the PPRAA shall be converted to cash, any and all debts shall be satisfied, and the remaining cash balance divided among all members of record in good standing who can be located. In case (c) all assets will be transferred to the new organization.

Last Amended 10/24/92 Kenneth L. Phillips NONKP

NOTICE: There have been numerous changes in the By-Laws since the last publication. If you have comments or suggestions please address them to the PPRAA Post office box on page two.

From Radio Waves to Einstein

Part III

by Susan K. Smith, KA7NNX

To summarize Parts I and II, James Clerk Maxwell in the mid 19th Century had taken stock of the accumulated knowledge about electromagnetism. His result was four concise statements, ever since known as "Maxwell's equations," which described all known electromagnetic interactions. Maxwell's equations predicted that all electromagnetic radiation propagated at 186,000 miles per second regardless of the velocity of the source of the radiation or the velocity of the observer. That prediction was at odds with Newtonian mechanics, which had reigned supreme for the past three centuries. But in 1887 the Michelson-Morley experiment confirmed that the speed of light was in fact constant. Visible light was simply radiation within a specific band of the electromagnetic spectrum. In 1888, Heinrich Hertz had succeeded in transmitting and receiving radiation at the lower frequencies of this spectrum. We now know these frequencies intimately in our hobby as radio waves.

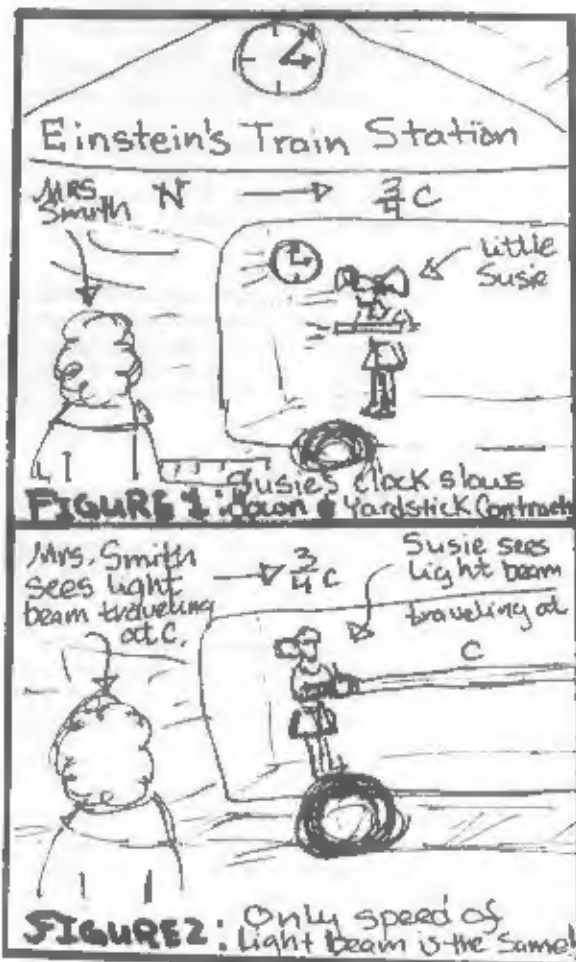
In 1905, a 26 year old patent office examiner, named Albert Einstein, published a short paper in the "Annalen der Physik," solving the riddle posed by the Michelson-Morley experiment. The contents of that paper--immortalized as "Einstein's Theory of Special Relativity"--proffered two simple postulates. (1) Newtonian relativity, sketched in Part II, was correct for speeds slow compared to that of light, and in the assumption that all laws of nature are the same for all (uniformly moving) inertial frames. (2) Einstein seized on the result of the Michelson-Morley experiment (predicted by Maxwell in the 1860's)--the speed of light "c" is always a constant.

These two postulates predict bizarre consequences observing systems within the ballpark of the speed of light, c. To illustrate, consider Figure 1. Let's say we see Mrs. Smith standing still at a train station. Little Susie whizzes by her in a glass covered boxcar traveling due north at 139,500 miles per second (or $3/4$ th of c.) Let's say little Susie is holding a yardstick aligned from south to north, her direction of motion. In her boxcar, little Susie measures her yardstick as three feet. But Mrs. Smith measures that same yardstick as almost 2 feet. (Susie's yardstick has contracted by a foot!) Assuming both Mrs. Smith and little Susie are wearing "perfect" watches, little Susie measures exact second intervals ticking on her watch. According to Mrs. Smith's watch, Susie's watch ticks at a slower rate of two seconds for Mrs. Smith's three seconds! Likewise, little Susie sees Mrs. Smith's yardstick contracted by a foot and her watch ticking at an equally slower rate. In Figure 2, let's say little Susie shines a flashlight due north. Newtonian relativity would predict that Mrs. Smith would measure the speed of that light beam as $7/4$ th of c ($3/4c + c$). Special relativity dictates that both Mrs. Smith and little Susie measure the speed of the light beam as c.

These illustrations go against our "gut" feeling. But our everyday experience sees objects traveling considerably slower than light. At slower speeds, the laws of special relativity reduce to Newton's laws. If little Susie were traveling only 40 miles per hour, the contraction of her yardstick or slower ticking rate of her watch as seen by Mrs. Smith would be imperceptible. Because electromagnetic radiation propagates at c, Newton's laws simply broke down. Special relativity, which expanded the laws of mechanics at very high speeds, bridged the gap between Maxwell and Newton.

Special relativity was the missing piece of another puzzle, brought up in Part II. Maxwell predicted and experiments confirmed that an observer measures only an electric field about a charge at rest. If either the charge or the observer moves, a magnetic field is seen in addition to the electric field. Einstein predicted that a magnetic field is intimately related to the choice of inertial frames and fundamentally is a relativistic effect. Simply put, **MAGNETISM = ELECTRICITY + RELATIVITY**.

Radio communication has a rich heritage of genius. It was born out of Maxwell's equations, which have still proven valid to this day. Electromagnetism changed Newton's concepts of absolute time and space and precipitated Einstein's theory of special relativity. Electromagnetic waves, the foundation of ham radio, is also the foundation that Einstein stood upon to unlock the mysteries of the universe.



FOX Hunting

EL Paso County Amateur Radio Direction Finding Group

Congratulations to Brandon N0HSM for finding the hidden transmitter located in Fox Run Park (Black Forest) on October 17th. Brandon utilized a L-Per tracking antenna and travelled a total of 2 hours and 29.8 miles.

The Fox was located approximately 10 miles from the starting point at the East library near Union and Vickers. Malcolm KE9S and Pam N9AHA volunteered to hide the Fox and used a homebrew CW beacon generator keying a Kenwood TH-21 HT with approximately 200 milliwatts of output power. To keep the confusion at its best, Malcolm also used a 2 meter beam antenna mounted horizontally and pointed it towards the south.

The next hunt is scheduled for November 14th, starting around 10 AM at the East Pike's Peak Library (North Union) in Colorado Springs. If you would like to volunteer to hide the Fox transmitter for the next hunt, please contact Doug N4TGO or Malcolm KE9S. This is real easy to do and can even be done from your shack, car, backyard, grocery store, bathroom, neigh-

TNX!!

Thanks to the hams who provided comm support to the Pikes Peak Ascent on Aug 22: Rob WB7WHT, Eric KB0KPP, Oak N0ROL, Ora N0QJX, Ivan N0MIX, John N0QJS, Bill K4YCD, Tom N0NTX, and Patty N0PSD. Everyone did a fine job and handled communications most professionally. Thanks also to the 146.82 repeater group in Woodland Park for the use of the repeater. It provided excellent coverage for most of the Pikes Peak highway.

HAM RADIO BBS

There is a new computer BBS in town. Rob WB7WHT has started a BBS to pick up where WB0BLV Lee Sublett's BBS left off. Unfortunately Lee has not been able to continue his BBS operations. The phone number for the new BBS is 719-282-0108 and operates at 1200 bps with 8 data bits, no parity check, and 1 stop bit (8-N-1). Use it for messages and file transfers. Most of Lee's files will be transferred to this new BBS. In time the data rate will increase and other functions will become available.

One year Board term, Steve K0CI.

Raffle prize winners were N0QJX, N0RNQ, W9YYO, W0MCT, WA2OOD, and John K.

An excellent "Old Timers Night" program was presented by Al, N2IWZ and several Club members who have been active in Ham Radio for 25 years or more.

The meeting adjourned at 9:15pm.

Submitted by Liz N0TUK PPRAA Secretary

Public Address System for PPRAA

Editor's note: The PPRAA Board has recieved several proposals for a public address system for use at club meetings as well as swapfest, picnic, and other club events. The following article is one of the proposals.

Hear Ye, Hear Ye

Our meetings are getting bigger and bigger all the time. More folks means more real estate at our meeting place. More real estate means (with the inverse square law) that fewer folks are within "earshot" of the speaker!

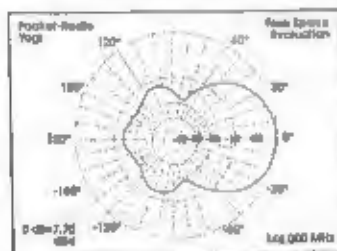
Many "check-ins" are lost to those people on the fringes of the real estate, don't you agree? The "eyeball QSO" with our friends becomes eyeball only, what with the background noise and chats going on.

I propose a highly portable public address system that we may use at monthly meetings, club picnics, field days and other rallies. The system will be 12-Volt DC supplied, using a storage battery and/or car battery. I will furnish two (2) professional Electrovoice PA speakers and a 16-watt public address amplifier for the project. (It has been used before for swapfests in a hanger at Pete Field).

Hear is the good part!... We make the input to the PA a 2-meter FM reciever! All speakers in the group would use 2-meter handi-talkies on some simplex frequency, passing the handy-talkie around among the people who "speak". There are always several handie-talkies brought to meetings by licensed hams, and and they could pass their units around, eliminating the need for expensive portable microphones like Oprah or Donohue, who don't use callsigns! Non-ham guests (third party) would also get a taste of live ham radio.

Oak, K0ROL

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